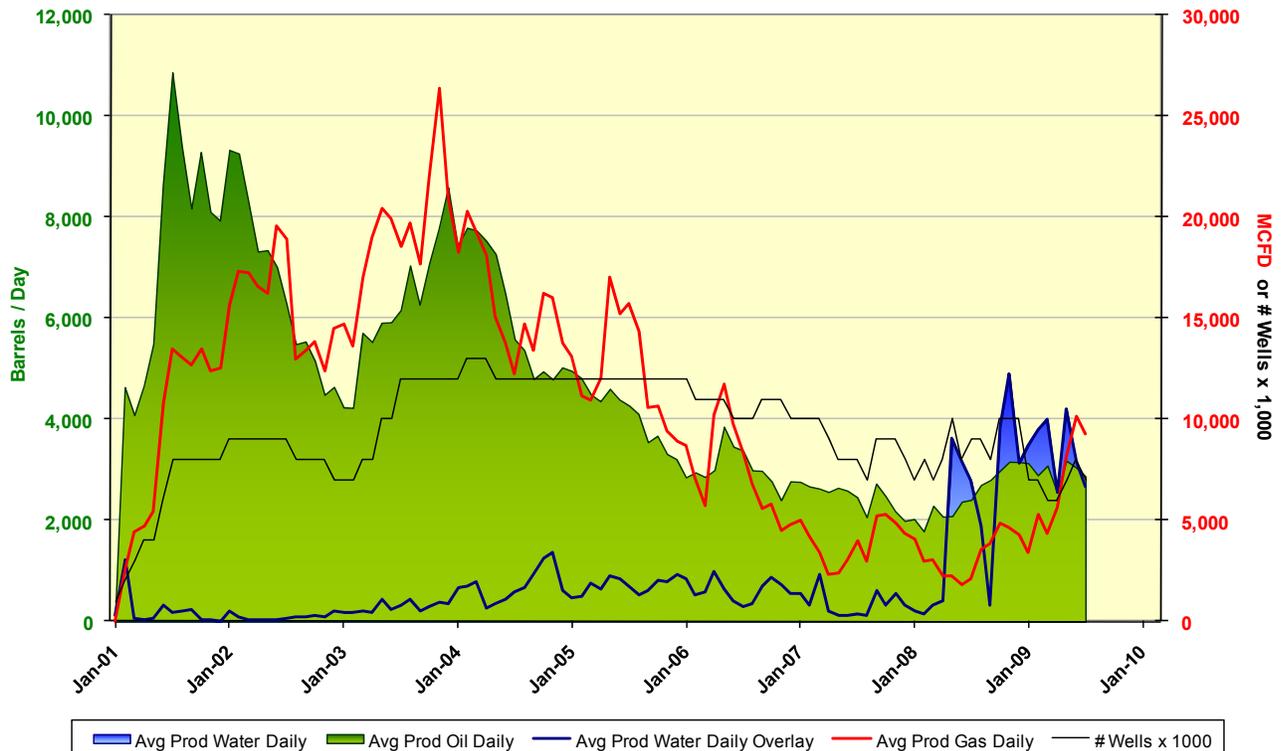


# Meltwater Oil Pool

## Summary

The Meltwater Oil Pool is located within and adjacent to the current boundaries of the Kuparuk River Unit (“KRU”). This is one of the satellite pools that have been discovered and developed utilizing the infrastructure built to develop the Kuparuk River Oil Pool within the KRU.<sup>1</sup> The pool occurs in the Bermuda Interval (“Bermuda”) of the late Cretaceous-aged (Cenomanian-Turonian) Seabee Formation. It was discovered in 2000 by the Meltwater North 1 exploratory well, and delineated by Meltwater 2 and 2A.<sup>2</sup> This pool is defined as the accumulation of hydrocarbons common to, and correlating with, the interval between the 6,785 and 6,974 feet measured depth (about 4,700’ and 5,500’ true vertical depth subsea<sup>3</sup>) in the Meltwater North #2A well.<sup>4</sup> Bermuda crude oil gravity is 37° API. No gas cap or oil-water contacts have been encountered within the pool.<sup>5</sup> Meltwater development has been from the KRU 2P-Pad, using wells spaced approximately 10 acres apart.<sup>6</sup>

### Average Daily Production Rates



<sup>1</sup> Alaska Oil and Gas Conservation Commission, 2003, Conservation Order No. 456a, available online at: [http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co450\\_499/co456a.htm](http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co450_499/co456a.htm)

<sup>2</sup> Alaska Oil and Gas Conservation Commission, 2001, Conservation Order No. 456, available online at: [http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co450\\_499/co456.htm](http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co450_499/co456.htm)

<sup>3</sup> Moothart, S., 2001, Testimony before the Alaska Oil and Gas Conservation Commission in support of the Application of ConocoPhillips Alaska Inc. to Define the Aurora Oil Pool, May 7, 2001, AOGCC Conservation Order No. 456 file.

<sup>4</sup> Alaska Oil and Gas Conservation Commission, 2003, Conservation Order No. 456a, cited above

<sup>5</sup> Alaska Oil and Gas Conservation Commission, 2001, Conservation Order No. 456, cited above

<sup>6</sup> Alaska Oil and Gas Conservation Commission, 2003, Conservation Order No. 456a, cited above

The first phase of project development began in January 2001 with pad and facility construction followed by drilling operations, which started in April 2001. Eleven wells were drilled (nine producers and two injectors), and regular production began in November 2001. In May 2002, production peaked at an average of 10,863 barrels of oil per day (“BOPD”), and then began to decline rapidly. Phase II development activities were conducted from October 2003 through May 2004. Four producers and four injectors were added, and one well was converted from production to injection.<sup>7</sup> Production reached a second peak of 8,588 BOPD in October 2004, then declined again. During the first three months of 2010, the Meltwater Oil Pool averaged about 3,000 BOPD, 6 million cubic feet of gas per day and 3,500 barrels of water per day (BWPD). Water production from the pool rose significantly in March 2009, and has generally ranged from 2,500 to 4,900 BWPD since then.<sup>8</sup>

## Geology

Meltwater is the stratigraphic equivalent to the Tarn oil pool to the north, and both share similar lithology. The Bermuda consists of channel fill and lobate sandstones deposited in a turbidite fan system located on a slope-apron environment below an incised, Cenomanian-age shelf. Reservoir sandstones at Meltwater are fine to very fine-grained, lithic-rich, have common mudstone laminations and interbeds, and average about 20% porosity and 12 millidarcies air permeability. Clay content of the sandstone ranges from 15 to 25%, but the clay minerals occur dominantly as framework grains rather than as matrix. The top of the Bermuda dips approximately 2 to 3 degrees to the east-southeast, and complex faulting occurs along the western (up-dip) margin of the pool. Hydrocarbons are stratigraphically trapped, and their distribution is controlled by the distribution of reservoir sands. Bermuda reservoirs are compartmentalized, due to discontinuous sandstone distribution. Shale-filled channel complexes, stratigraphic pinch-outs and structural barriers all act as lateral boundaries within the pool.<sup>9,10</sup>

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<sup>7</sup> ConocoPhillips, 2010, Unit Plan of Development, Meltwater Participating Area, August 1, 2010-July 31, 2011

<sup>8</sup> Alaska Oil and Gas Conservation Commission, 2010, Production Database

<sup>9</sup> Alaska Oil and Gas Conservation Commission, 2001, Conservation Order No. 456, cited above

<sup>10</sup> ConocoPhillips, 2010, Unit Plan of Development, cited above